Mild shield Sapienza

Alberto Acevedo-Rentería
advised by Eric Vázquez-Jáuregui
Physics Institute, UNAM

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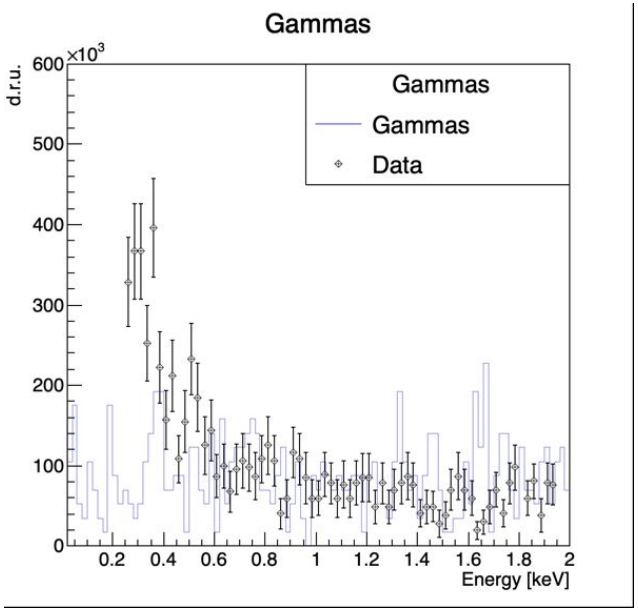
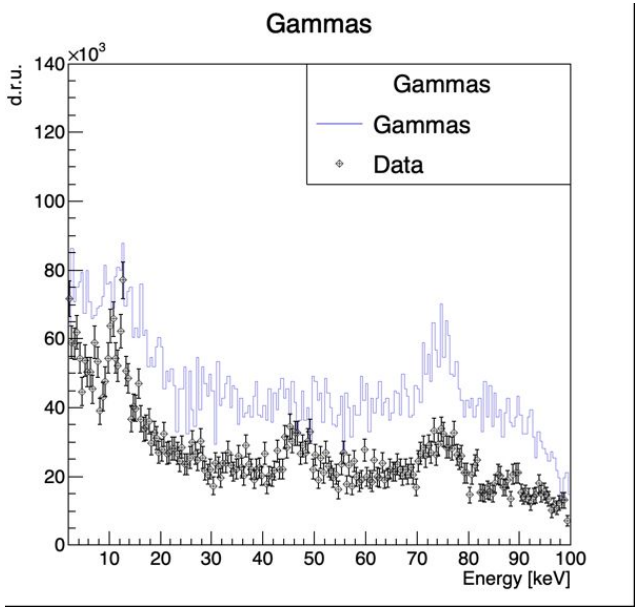
Experimental setup and simulations

- Experimental resolution implemented to the analysis code for the simulations
  - resolution and data from Matteo
    - three regions
      - low [2,21] keV
      - medium [21,60] keV
      - high [60,100] keV
  - simulations for
    - gammas
    - radiogenic (fast) neutrons
    - muons
    - ^{210}Pb
- No resolution is applied below 2 keV

Simulations

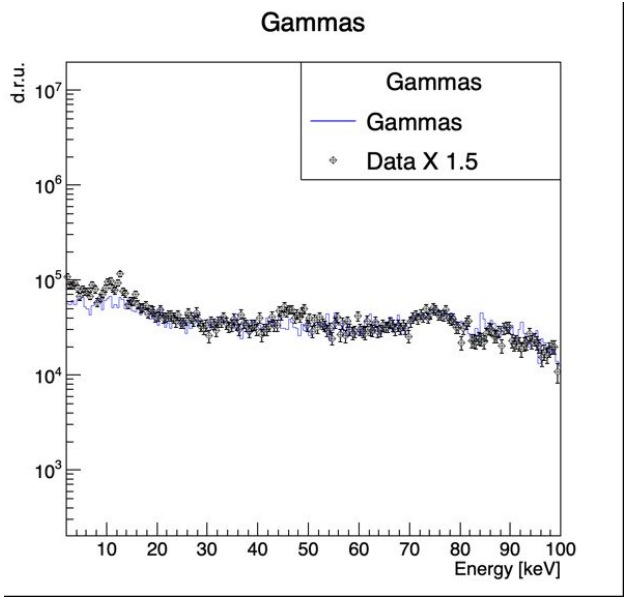
- Main contribution to the background are gammas
  - radiogenic neutrons and muons are near 2 order of magnitude lower
- From 0.2 to 2 keV the simulation and data seem to agree, but for higher energies the simulation predicts a major contribution

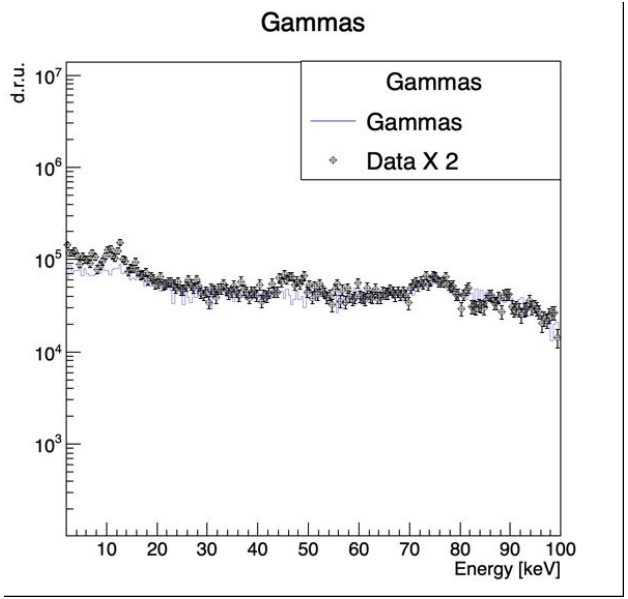




Simulations

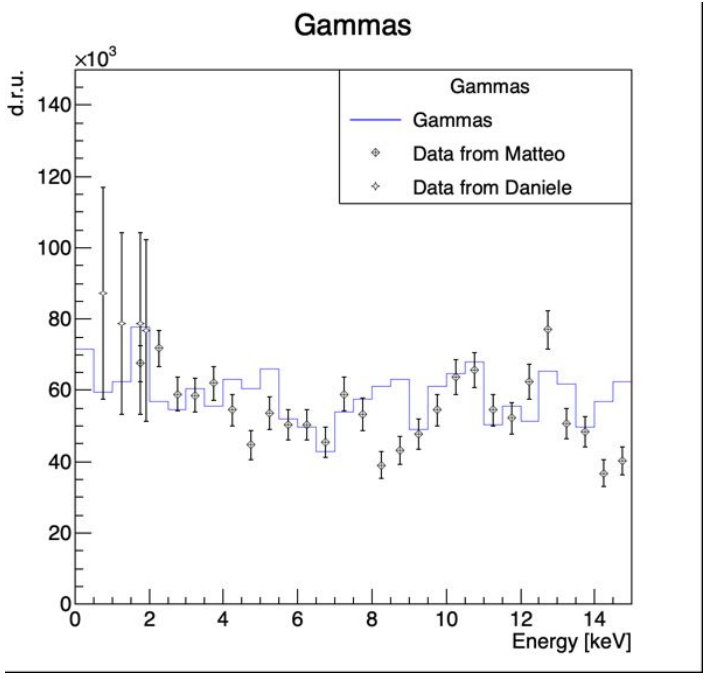
- The difference between the simulations and data was found to be near a factor of 2
- An stricter cut to the analysis for the simulations, reduced the factor to 1.5



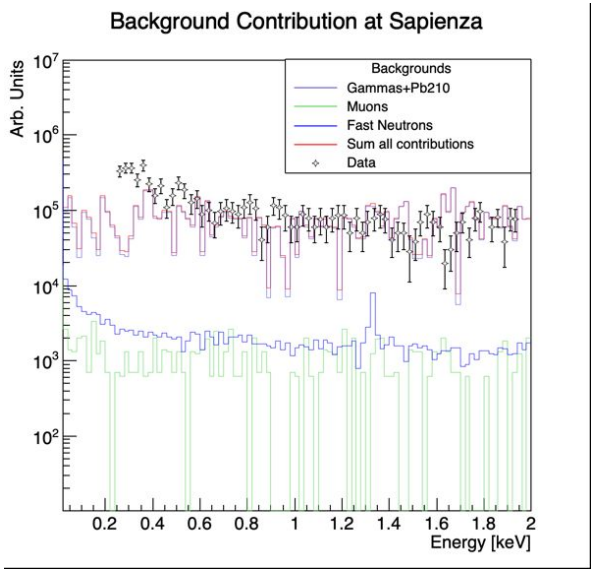


Simulations

- Below 2 keV there is no resolution applied, could it be there be a sept in the simulation from this difference?



- The rise below 0.6 keV is not characterized by simulations
  - radiogenic neutrons do have a rise a low energies but it is almost 2 of magnitude lower than what was observed
  - muons have been studied considering different cut values but it is not enough to explain the rise observed



Summary

- A recheck of the geometry
- Before the update of the geometry the simulations were in accordance with the data, but the geometry did not represented the current experimental setup, some extra modifications might be needed
    - could the modifications done for the simulations looking for the rise below 0.5 keV have an effect at higher energies?
- The cut implemented in the code is stricter than the one used in the data
- Priority to determine the differences